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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Martin Bergsmann

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EXAMINER

GRABOWSKI, KYLE ROBERT

ART UNIT

PAPER NUMBER

3725

NOTIFICATION DATE

DELIVERY MODE

02/03/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/587,074	BERGSMANN ET AL.	
	Examiner	Art Unit	
	Kyle Grabowski	3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 3-6,26-30 and 32-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-25 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is a non-final action in response to the RCE and claims filed on 10/28/10.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-2, 7-25, and 31, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for "wherein the metal clusters of the first layer [and second layer] are spaced apart from each other such that adjacent metal clusters are not in contact". The applicant points to Figures 1-6 for alleged support in the specification (Remarks, Pg. 1) however there is absolutely no support in the specification to corroborate with the drawings. Based on basic knowledge within the vacuum sputtering art, upon which the current invention and cited prior art use, the drawings are cartoonish and in no way represent the actual physical structures attempting to be claimed (see also pictorial representation of light ray 10, Fig. 2).

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4. As an example, the metal cluster layer is preferably 3-10 nm (Specification, Pg 3) which would require a thickness of several thousand atoms alone (depending on the particular metal and bonding distance). The only way that this thickness could be achieved, while providing for metal clusters being spaced apart from each other (cluster definition: a group of three or more atoms) would require giant physical structures (e.g. spherical clusters) that have a diameter of 3-10 nm, the spherical clusters being spaced apart. While nanoclusters are known in the art, it is unclear how such structures could be created by the various known methods stated e.g. sputtering a preferred method of forming the "clusters" is a process of bombarding single atoms onto a target substrate.

5. If the applicant indeed intends to be claiming a layer of 3-10 nm spherical elements, there is no support in the specification for this assertion.

6. For prosecution on their merits, as best can be construed by the examiner, smaller metal clusters and/or single atoms are formed on a substrate via a standard sputtering process. Several layers of atoms are required to achieve a thickness of 3-10 nm.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-2, 7-25, and 31, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed subject matter is unclear for the reasons stated above.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-2, 9-10, 13-22, 24, and 31, are rejected under 35 U.S.C. 102(b) as being anticipated by Bauer et al. (WO/02/18155). WO/02/18155 will be referenced via Bauer et al. (US 7,396,557) which is supplied in English and construed to be identical in content.

11. In respect to claims 1, 21, and 31, Bauer et al. disclose a polymeric spacer layer 3; a first layer of metal clusters 4 formed on a first side of the polymeric spacer layer 3 and a second layer of metal clusters 1 formed on a second side of the polymeric spacer layer 3; the metal clusters 1 and 4 are spaced apart from each other such that adjacent metal clusters are not in contact; the metal clusters may be formed of several electrically conductive materials e.g. gold (Col. 3, 47 - Col. 4, 3, Fig. 2).

12. In respect to claim 2, by virtue of the metal clusters being “spaced apart” they form a partial layer.

13. In respect to claims 9, 19, and 24 Bauer et al. further disclose a carrier substrate 6 which may have a transfer lacquer layer (adhesive) 7 (Fig. 4).

14. In respect to claim 10, Bauer et al. further disclose using several different materials for the metallic clusters (Col. 2, 27-28).

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15. In respect to claim 13-18, Bauer et al. disclose the security element forming a pattern or drawing (individualization). The difference in relief appears as different colored regions (Col. 2, 6-10). Bauer et al. does not disclose providing individualization of the polymeric spacer through electromagnetic waves, laser treatment, or printing die however, although product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

16. In respect to claim 20, Bauer et al. disclose the polymeric spacer layer and metal cluster layer providing a color shift effect (Col. 2, 40-52).

17. In respect to claim 22, Bauer et al. disclose a protective lacquer layer 5 (Fig. 2).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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19. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 1-2, 8-22, 24, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heim (US 2005/0151368) in view of Mayer et al. (US 6,565,770).

21. In respect to claims 1 and 10, as best can be construed by the examiner, Heim discloses a forgery proof security feature comprising two metal cluster layers (see 35 U.S.C. 112 rejection above) "absorber layers" A1 and A2, and a spacer layer "dielectric" D (Fig. 6). The absorber layers may be formed of metals (0017) which are deposited via a vapor deposition method (0021), therefore producing metal clusters (groups of two or more metal atoms). The cluster layers may be formed of different metals (0017). The combined layers form a color shift effect (Abstract). Heim does not explicitly disclose an "electronically conductive security feature" present, for example, in either of the first or second metal layers however while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). (MPEP 2114). The clusters may be gold (0029), which is an excellent electrical conductor and thus are functionally capable as serving as an "electrically conductive security feature".

22. Heim substantially discloses the claimed subject matter for the reasons stated above but does not explicitly disclose the spacer layer D comprising a polymer, however Mayer et al. teach a very similar security element with color shift effect wherein the dielectric spacer can comprise a variety of materials including polymers (Col. 8, 38-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the spacer layer taught in Heim as a polymeric material in view of Mayer et al. since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Further, Heim discloses that *any* vapor-depositable transparent compound may be used for the spacer layer (0018) and Mayer et al., providing a more extensive list of suitable materials, also includes every material Heim lists as an example.

23. In respect to claim 2, Heim further discloses that the metal cluster layers “absorbers” A1 and A2 may be imparted via gaps in their structures (thereby making the layers partial); the gaps may comprise characters or patterns (0035).

24. In respect to claim 8, Heim further discloses the spacer layer D having optically active structures (formed via diffraction grating 8) (Fig. 5).

25. In respect to claim 9, Heim further discloses a carrier substrate forming a transfer lacquer layer (0032).

26. In respect to claims 11 and 12, Heim further discloses, for example, Nickel or Iron compounds for the metal cluster layers. These substances are inherently magnetic (further security features).

27. In respect to claim 13-17, Heim discloses the claimed subject matter for the reasons stated above, i.e. providing logos, codes, symbols, (individualization) via gaps in the layers, these gaps further provide different colored effects (0035). Heim does not disclose how the individualization is produced (e.g. electromagnetic waves/laser), however, although product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

28. In respect to claim 18, Heim further discloses filigree or guilloche structures (fine structures) present on the security element (0032).

29. In respect to claim 19, 21, and 31, Heim further discloses that the security element 2 may be applied to a sheet 1 (banknote) and span an open-area clearance 3 (Fig. 2).

30. In respect to claim 20, Heim further discloses the disposition of several alternating spacer (dielectric) and metal cluster (absorber) layers (0015) (inherently having different color effects). Further the holographic structure 8 may comprise a reflective metallic background (0073, Fig. 6).

31. In respect to claims 22 and 24, Heim further discloses that a lacquer or transparent layer may be provided on the security element during transfer (0032).

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32. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heim (US 2005/0151368) in view of Mayer et al. (US 6,565,770) as applied to claim 1 above, and further in view of Chen (US 4,792,667). Heim as modified by Mayer et al. substantially disclose the subject matter for the reasons stated above, but do not disclose an additional polymer layer having piezoelectric properties however Chen discloses a security document utilizing a protective layer having piezoelectric characteristics (Col. 1, 59-69), comprising, for example, polyvinylidene fluoride (PVDF) a piezoelectric polymer (Col. 2, 55-60), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the security element taught in Heim as modified by Mayer et al. with a piezoelectric polymer coating in view of Chen to provide additional security features, such as an indication that heat was applied in effort to alter the security element (Col. 3, 39- Col. 4, 2).

33. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heim (US 2005/0151368) in view of Mayer et al. (US 6,565,770) as applied to claims 22 and 24 above, and further in view of Adamczyk et al. (US 2004/0050269). Heim as modified by Mayer et al. substantially disclose the claimed subject matter for the reasons stated above but do not disclose pigments in the adhesive/lacquer layer however Adamczyk et al. disclose embedding pigments such as luminescence substances in lacquer layers (0035) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the lacquer/adhesive taught in Heim as modified by Mayer et al. with pigments in view of Adamczyk et al. to produce

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an added security element “effect” to the lacquer layer (0035). Further, the claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art. (i.e. imparting pigmentation to a lacquer layer).

Response to Arguments

34. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

35. Also, a 35 U.S.C. 112 rejection has been applied because the specification lacks support for the amended subject matter.

Conclusion

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle Grabowski whose telephone number is (571)270-3518. The examiner can normally be reached on Monday-Thursday, 9am - 7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dana Ross can be reached on (571)272-4480. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kyle Grabowski/
Examiner, Art Unit 3725

/Dana Ross/
Supervisory Patent Examiner, Art
Unit 3725